



CONCRETE FOR MSE SYSTEMS AND OTHER COMMERCIAL PRECASTING WORKS
MSP-91-09A

1.0 DESCRIPTION OF MSP-91-09A. This specification covers the requirements for the manufacturing of precast panels for mechanically stabilized earth (MSE) wall systems and other commercial precasting works.

1.1 Unless otherwise stated, specification section references are from the version, in effect at the time of this contract, of the Missouri Standard Specifications for Highway Construction and its supplements.

2.0 MATERIALS.

2.1 Cement. Cement shall conform with the requirements of Sec 1019.

2.2 Aggregates. Fine and coarse aggregates for the concrete mixture shall comply with the requirements of Sec 1005, except that requirements for gradation and percent passing the No. 200 sieve shall not apply.

2.3 Fly ash. Fly ash shall comply with the requirements of Sec 1018.

2.4 Admixtures. Retarding or accelerating admixtures, or any additive containing chloride shall not be used without the approval of the engineer. All admixtures shall meet Sec 1054.

2.5 Reinforcing Steel. Reinforcing steel shall be as specified in the plans, meeting the applicable sections of Sec 1036.

3.0 MIXTURE.

3.1 Design. The minimum compressive strength of the concrete shall be 4000 pound per square inch at 28 days. Units not attaining this strength by 28 days shall be rejected.

3.2 The proportion of cementitious material shall not be less than 564 pounds per cubic yard of concrete. Fly ash may be used in accordance with Sec 501. Class B or B-1 concrete may be used, in which case materials, proportioning, mixing, slump, and transporting of concrete shall be in accordance with Sec 501.

3.3 The aggregates shall be sized, graded, proportioned, and thoroughly mixed in a batch mixer with such proportions of cement and water, as will produce a homogeneous concrete mixture of such quality that the panels will conform to the test and design requirements.

3.4 The concrete shall contain 5 1/2 percent air by volume, with an operating tolerance of 1 1/2 percent. The slump shall not exceed 4 inches. If a high range water reducer is used, the dosage rate shall be in accordance with manufacturer's recommendation, the air content shall be 6% plus 2 percent or minus 1 1/2 percent and the slump shall not exceed 8 inches.

4.0 MANUFACTURE.

4.1 Casting. Unless otherwise indicated, the panels shall be cast front face down on a flat area, without interruption and consolidated to eliminate honeycombing. The rear face shall be screeded. Other units shall be cast as required in the plans.

4.2 Marking. The date of manufacture, production lot number, and piece mark shall be clearly scribed on an unexposed face of each panel or unit.

4.3 Curing. Curing shall be in accordance with applicable provisions of Sec 1026, until the concrete has developed the specified compressive strength. No membrane cure shall be applied to the face of MSE panels. Otherwise, membrane curing is normally allowed unless specifically prohibited in the plans.

4.4 Form Removal. The forms shall remain in place until they can be removed without damage to the unit, at which time curing shall be applied as specified.

5.0 STORAGE AND HANDLING. All units shall be handled, stored, and shipped in such a manner to prevent chipping, discoloration, cracks, or other defects. Panels in storage shall be firmly supported to protect connection devices and the exposed exterior surface.

6.0 TOLERANCES.

6.1 MSE Panel Dimensions. All tie strap locations shall be within 1 inch, all other dimensions within 3/16 inch.

6.2 MSE Panel Squareness. Squareness, as determined by the difference between the two diagonals, shall not exceed 1/2 inch.

6.3 Other types of unit tolerances shall be as listed in the plans.

7.0 ACCEPTANCE. Units exceeding the allowable tolerances or those which are cracked or have defects due to molding, honeycombing, color variation on the front face, or severe cracking will be rejected.